

Hale (L.)

TROUSSEAU CONDENSED,

BY

DR. L. HALE.

ALBANY, N. Y. :
L. H. BURDICK,
51 North Pearl Street.

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This is published for the profession. Its object is to give, in a brief space, TROUSSEAU's views and arguments. The great size of "TROUSSEAU'S LECTURES ON CLINICAL MEDICINE," translated by BAZIRE, is a hindrance to its general use. If this abridged fragment shall seem to my medical friends to be valuable, the publication of an abridgment of the rest of TROUSSEAU's LECTURES may be expected.

L. H.

TROUSSEAU CONDENSED.

LECTURE I.

Cerebral Hæmorrhage.

Apoplexy from cerebral hæmorrhage is sudden in exceptional cases only.—When hæmorrhage causes apoplexy; when paralysis.—Diagnosis between a lesion of the brain and facial palsy; between hæmorrhage and softening.—The cause of hæmorrhage.—Prognosis.—The impropriety of venesection.

In apoplexy from cerebral hæmorrhage, the attack generally comes on gradually, without great severity; coma supervening ten minutes, half an hour, or several hours afterward; a man is not struck down as by a blow, dropping instantly in a state of unconsciousness excepting only when there is effusion of blood

1. Into the ventricles;
2. Into the Pons Varolii, a central part where all the nerve fibres converge;
3. To an enormous amount in the centrum ovale of Vieussens; or,
4. To a great amount likewise into the arachnoid sac; and,
5. Whenever cerebral hæmorrhage follows an epileptiform attack, apoplectic stupor will set in suddenly, as it does after every attack of epilepsy.

Symptoms apparently premonitory may occur in cases of blood effusion into the lateral ventricles; before the effusion occurs, blood has accumulated in a portion of the brain near the surface of the ventricles, and has already given rise to symptoms, which may have been mistaken, but which indicate to the experienced practitioner the existence of hæmorrhage, or of a morbid process which has caused capillary hæmorrhage. Suppose, for example, that such a morbid process takes place in a corpus striatum, and that in consequence of it a number of small clots have formed,

varying from the size of a small pin's head to the size of a lentil, so far there will be only a sensation of weight in the head and of numbness in the side opposite to the lesion; but if the blood finds its way into a ventricle, the person falls down struck suddenly with apoplexy; the hæmorrhage, one clot or more, dates in reality a few days back, when the first symptoms were noticed.

There is a great difference between cerebral hæmorrhage and apoplexy. Apoplectiform phenomena may be the result of

1. Cerebral softening;
2. Effusion of serum of greater or less amount;
3. (Rarely) great congestion without extravasation (ictus sanguinis);
4. Embolism;
5. "Nervous" apoplexy, with no appreciable lesion on dissection;
6. May follow immediately after attacks of epilepsy or eclampsia;
7. But apoplexy follows cerebral hæmorrhage only when the clot is pretty considerable; when *small* hæmorrhagic clots are formed, the only symptoms are those of *paralysis*, more or less complete, and more or less limited in extent, on the opposite side of the body; without any impairment of the intellect, or any affection of the senses.

A hospital patient, with no notable disturbance of his general health, suddenly found that his tongue was embarrassed, and his speech was thick; there had been no premonitory headache or giddiness; his intellect was not in the least affected; his sight was perfect; his gait was not vacillating; but as soon as he took up his pen, he had some difficulty in using it, and the letters were not as well formed as usual. He mentioned this to no one, and at my visit, on the following morning, he did not think of complaining. On coming near him, however, I was struck with the deformity of his face; on the left side, the labial commissure was markedly pulled upwards and outwards, whilst it was lower on the right, the right cheek being flattened and almost motionless. On protruding the tongue, it seemed to incline to the right, but this deviation was only apparent, and was due to the change in the normal relations of the tongue to the aperture of the mouth. The paralysis did not involve the face alone, for besides the awkwardness in writing, there was weakness of the whole

upper extremity on the right side, and on the day of my visit he had tingling sensations in the tips of the fingers of the right hand, which had lasted a minute or two; the sensibility of the skin was perfect and normal. The case has caused me some anxiety.

Now, what is the matter with this man? He is suffering from the effect of a small hæmorrhage, perhaps the size of a lentil or cherry stone, into the left hemisphere of the brain. At first sight, the diagnosis offered some difficulty, for the case might have been thought one of facial paralysis only.

In facial paralysis caused by a lesion of one hemisphere of the brain, whether attended or not by paralysis of the limbs on the same side, the patient cannot perform with ease certain movements on the affected side,—such as blowing, or getting back into the cavity of the mouth food which has lodged between the cheek and the teeth; but he is not completely incapable of performing such movements, and the difficulty he experiences is never so great as that felt by individuals suffering from pure facial paralysis. And further, if a hemiplegic patient be asked to shut his eye, he does it completely enough to hide the eyeball; which remains uncovered in paralysis of the seventh pair. I do not attempt to find a reason for this difference.

The differential diagnosis between cerebral hæmorrhage and softening, is one of the most difficult problems in pathology. A man was seized in the midst of the most perfect health, except that for the last eight or ten days he had suffered from occasional giddiness and headache, and had felt confused at times. He had also noticed a sensation of numbness in his right hand and foot. He was not, however, prevented from walking about, and attending to his usual occupation, when suddenly he was struck with palsy of the right side. He then came to the Hotel-Dieu, where I found complete paralysis of motion with relaxation of the right arm and leg, involving the right half of the face; nearly absolute anæsthesia of the integuments of the affected parts; marked dullness of aspect and slowness of speech; the patient was free from fever.

To make the diagnosis of this case, I follow Recamier. When hemiplegia occurs *suddenly*, without coma, softening may be diagnosed; or without regard to antecedent phenomena—which are far inferior in value to actual symptoms—complete loss of power without loss of consciousness, belongs more especially to softening.

When, however, loss of consciousness, and especially *sudden* coma, does accompany complete loss of motor power, a considerable hæmorrhage may be diagnosed.

But when—as in this case—the intellect is affected to some extent, but not entirely—when there is obtuseness, but not complete loss of sensibility, whilst there is absolute loss of motor power—we must always diagnose hæmorrhage in connection with softening, or what has been termed capillary hæmorrhage.

This latter form usually takes place in a softened portion of the brain, and is characterized on dissection by the presence of a large number of small clots, either isolated, or coalesced, to form larger hæmorrhagic centres.

In these cases only did Recamier admit the antecedent softening which Rochoux regarded as the organic condition which precedes all cerebral hæmorrhage; in other cases softening is an effect and not a cause. The cause of cerebral hæmorrhage, Abercrombie referred to the changes in the coats of the cerebral arteries—such as yellow laminae of cartilaginous consistency, mostly impregnated with calcareous salts; but they cannot be essential to hæmorrhage, since they are not met with in the greater number of instances, although present in some.

Small hæmorrhages are not by themselves fatal; although they make another attack unpleasantly probable. As a rule, the leg regains the power of motion much quicker than the arm. The prognosis is much more unfavorable when the reverse obtains. I cannot say whether a morbid process goes on around the clot, causing chronic softening or irregular cicatrices; but whatever the cause may be, the fact remains.

When after a seizure the fingers becomes flexed into the palm of the hand through permanent contraction of the flexors, the extensors never regain their power, and the power of motion in the upper limb is nearly abolished.

In the treatment of any of these cases, shall we bleed, locally generally, or both? I simply do nothing. What influence, I ask, can be exerted on a foreign body, in the shape of extravasated blood, by letting out blood from a vein of the arm, or of the foot, or from the jugular, or by dividing an artery, by cupping or leeches? Of what use are purgatives or revulsives? It is said that blood-letting, and that purgatives—a kind of serous bleeding—empty the vessels, and thus (1st) facilitates the absorption of

extravasated blood, (2ndly) that they antagonize cerebral congestion, which — according at least to the practitioners who recommend them — precedes, accompanies or follows the extravasation of blood; and by thus preventing an exaggerated flow of liquid they diminish the risk of the effusion becoming more considerable, or occurring the second time.

With regard to the first point, do not surgeons reject leeches as injurious instead of useful in cases of extravasation of blood under the skin? Now can we act more powerfully upon *ecchymoses* of the brain, than on those of the surface of the body? Reason, agreeing with experience, pronounces useless the treatment against which I raise my voice.

As to the second point, namely, that blood-letting will arrest the molimen hæmorrhagicum, it is indeed very doubtful. Do we know the organic conditions under which cerebral hæmorrhage is produced? That congestion sometimes accompanies it, is generally accepted; but is not this an effect, rather than a cause? What influence then can blood-letting exert upon this sequential hyperæmia, when it has none upon the clot generating it? Far from being useful, blood-letting has seemed to me to favor, rather than prevent congestion. I hope to be able to show you in the next lecture that apoplectic phenomena are in some measure more allied to syncope than to congestion, and that bleeding is therefore contraindicated, not demanded. Attacks of giddiness in apoplectic patients have been considered threatenings of another hæmorrhage; on careful questioning, however, I have found that the giddiness comes on more frequently while fasting, and ceases immediately on taking food; these attacks then are due to a deficiency in the normal constituents of the blood, and not to an excess of blood in the vessels.

In from twenty to twenty-four hours after the first symptoms of cerebral hæmorrhage, febrile action may set in, and is rarely absent in hæmorrhages of large amount — the cause of which I cannot well explain — and in most cases reaches its maximum on the second or third day; upon this authors lay too little stress. At such times it is difficult for a young practitioner not to follow the fashion of the day, and yield to the apparent urgency, to the entreaties of the friends who ask for bleeding, as well as to the advice of brother practitioners who regard it necessary; and the knowledge that in a certain number of cases this fever only

ushers in formidable brain symptoms which becomes rapidly fatal, renders non-interference still more difficult. To save your responsibility in such cases, open a vein; but in such a way as to draw only an insignificant quantity of blood, and explain to the friends that it would be dangerous to go further.

A patient struck with cerebral hæmorrhage was bled to the amount of three ounces only, when he fell into a state of complete resolution from which he never rallied; death occurred a few days afterwards. But a moment before the bleeding he was in the full enjoyment of all his faculties, and conversed freely and ably with his friends around.

Instead of bleeding my patients, of putting them on low diet, and keeping them in bed, I do not draw blood from them; I recommend them to get up if possible; at least to remain in the sitting posture; and I feed them.

LECTURE II.

Cerebral Congestion.

Cerebral Surprise. — Gaitle Vertigo. — Cerebral Symptoms from Aural Disease. — Epileptic Vertigo; Irresistible Impulses. — Epilepsy and Eclampsia identical neuroses. — Congestion does not produce sudden and transient Apoplexy. — What is ascribed to Cerebral Congestion.

A man while walking is suddenly seized with giddiness; he loses his sight and the faculty of speech, merely uttering a few unintelligible words; he staggers and sometimes fall down, but rises immediately. The whole set of symptoms may occur within a few seconds, and are, followed by only a slight heaviness of the head, and sometimes by transient mental confusion; after a few minutes he is as well as before.

Such phenomena are said to indicate slight cerebral congestion. I used to say so, like the rest, but I do not now.

Of these sudden and transient apoplectic attacks there are four classes.

1. A man becomes suddenly insensible. After a few hours or several days he becomes conscious, and recovers with a slight degree of hemiplegia, which gradually passes off in the course of a few weeks or several months.

It is said that the cerebral hæmorrhage has been attended with congestion, and that the transient congestion has caused transient apoplexy, and on disappearing has left behind it the small hæmorrhage and paralysis; but on the other hand I ask attention to the instantaneous stupor caused by wounds or compression of the brain.

a. When the brain is torn or wounded, the man drops — becoming suddenly insensible. But by degrees — notwithstanding the intracranial effusions of blood, and the inflammatory condition inseparable from laceration — the mind, and the power of motion and sensation are sometimes recovered with extraordinary rapidity, thus giving the inexperienced surgeon hopes that are unfortunately never realized.

b. On trephining the skull of an animal and introducing a small leaden ball through an aperture in the dura mater, between

the skull and the surface of the brain, symptoms of stupor are immediately manifested; they gradually pass off and are followed by a degree of hemiplegia proportionate to the compression. In this experiment no cerebral congestion can be appealed to.

Am I not authorized then to say that when blood is suddenly effused into a corpus striatum or optic thalamus, the immediate stupor, which is ordinarily attributed to a simultaneous congestion, can, in part at least be due to *Cerebral Surprise*?

2. When a person moves suddenly in bed he feels the bed turn and carry him around with it. If he gets up, and particularly if he looks up, the giddiness increases. He staggers, is sometimes unable to remain standing; there is intolerable nausea, and very often vomiting. There is said to be a "rush of blood to the head" but, bleeding and revulsives make things worse. These attacks are from *gastic disorders* and are more allied to syncope, the reverse of congestion.

3. Dr. Meniere long ago observed cases, in which, an individual, seized suddenly with vertigo, nausea and vomiting, after walking as if he were intoxicated, fell down; got up with difficulty and remained for a time pale, bathed in cold sweat, almost in a state of syncope. This was called cerebral congestion. But in the immense majority of such cases the patient complains of tinnitus aurium and of hardness of hearing in one or both ears; the internal ear was found to be the starting point of the phenomena, and disease of the semicircular canals was the cause of the vertigo, sympathetic vomiting, paralysis of limbs, and sudden coma.

4. I was called to see a neighbor aged 70. He was reviving as I arrived, and moved his arms and legs unconsciously. His lips and nose were swollen and his eyes injected. He had been insensible for fifteen minutes. Within a few hours he recovered entirely without active treatment. I learned that in the last few years he had had several attacks, and the symptoms had passed off in the same way, once after bleeding, and at other times after a mustard foot bath.

In the same year I was consulted by a man aged 35 who in the last six months, had had three apoplectic fits. He had been bled and purged on each occasion to his great satisfaction, and leeches were applied once a month around his anus.

Can apoplexy occur every two months in persons aged 35? I expressed the opinion that this man had epilepsy; and soon he had a regular epileptic fit, which left no doubt in any body's mind.

My attention had now been roused, and I kept on the watch.

As to the other case—aged 70—he had occasional attacks, and never goes out without his servant; who informs me that his master makes grimaces while walking, and has startings in one of his arms, which last scarcely a minute, but are amply sufficient to characterize epilepsy.

Since that time, whenever I have been consulted for a case of apoplectiform cerebral congestion, epilepsy or eclampsia has become plain, in *almost every* instance. Epilepsy is far more common than is generally believed. One reason why it is so often unrecognized, is the repugnance of families to confide the sad complaint even to the physician; in their account of the case they will mention the coma, but often omit the convulsions. And many practitioners will not, even in this age, believe in so terrible a disease, even if they recognize it. Under some circumstances I have not the courage to tell the patient the painful truth, but wilfully speak of cerebral congestion.

In these cases of so-called apoplectiform cerebral congestion which are really epileptic vertigo, sudden and irresistible impulse is common, which impels to maniacal acts, which seem criminal because there is perfect intelligence immediately before and shortly after the attack. Even during an attack the patient may answer questions *to the point*, and to a superficial observer may seem to be conscious; but after the fit, he has no recollection of what has just passed.

A dissimilar condition exists when delirium supervenes in the course of an acute disease, or follows chronic poisoning by alcoholic drinks, or is the consequence of repeated attacks of epilepsy which lead to dementia—when the man is by common consent insane; his actions are voluntary, methodical and in every case remembered; if he does act from sudden and irresistible impulse instead of after long and matured premeditation, he does so in most cases under the influences of hallucinations which justify the act in his eyes. In regard to irresistible impulse in hysterical and pregnant women, I am very incredulous.

The acts of an epileptic during his delirium are unpremeditated, involuntary and unconscious, and all recollection of them is lost; as occurs in a man poisoned by alcohol, belladonna, or haschisch, or an idiot, who may kill a man as he would break a piece of wood.

For instance, a newly married lady told me that, shortly after her marriage, she was awaked one night by her husband's striking her with awful violence, and she was with difficulty rescued from him. On another occasion she awoke earlier in the course of the attack, and saw the convulsions with which her husband was seized; flight saved her from the violence which immediately followed. The details were told in the presence of the poor man, who then informed me that before marriage he had often had attacks of vertigo, the character of which had not been recognized by the medical men whom he had consulted.

I have known a very intelligent magistrate. One day he suddenly mutters a few unintelligible words, he goes to the deliberating room, and makes water in a corner. In a few minutes he listens to the pleadings with no recollections of his incredibly incongruous conduct. During a meeting of a literary society he was seized with vertigo; he ran quickly through the streets avoiding both carriages and passers by; on recovering himself after a few minutes, he returned to the meeting, and with a perfectly lucid mind resumed the discussion in which he had been taking an active part.

Now, had this patient quarreled with and killed a man in the street, would a magistrate have believed that an individual who five minutes before and five minutes after was remarkably intelligent, and who, during this pretended nervous seizure, seemed to have his free will, could commit murder under the influence of an irresistible impulse?

Epileptics may of course be great criminals; if not insane in the intervals between the fits, they are then free agents like other men. But when an individual who has ever suffered from epilepsy has committed a murder, without any possible motive, without profit to himself or to any other person, without premeditation or passion, openly, and consequently not as crimes are usually committed, — I have the right of affirming before a magistrate that the criminal impulse has been the effect *almost to a*

certainty of the epileptic shock; and if I had seen a fit or an attack of vertigo immediately precede the criminal act, I would then affirm *most positively* that the man had acted from irresistible impulse.

Epilepsy and eclampsia, in my opinion, are identical neuroses. They are identical, first, with regard to their symptomatic expression. No one can ever distinguish between convulsions in a pregnant woman long afflicted with epilepsy, and convulsions in a woman seized with eclampsia at the beginning of labor; in regard to the convulsive symptoms, epilepsy is recurring eclampsia, and eclampsia is accidental and transitory epilepsy.

Eclampsia differs from epilepsy in the continuity and occasional prolonged duration of the attacks; but cases of eclampsia occur in which there is but a single attack, and cases of epilepsy with continuous seizures.

Secondly, with regard to their proximate cause, they are identical neuroses.

If a person has been subject to almost periodical fits for twenty years, and shows no signs of insanity or general paralysis, we call the disease *idiopathic epilepsy*.

If in the interval there is hemiplegia, violent headache, or exclusively nocturnal pain, we suspect the *epilepsy* to be *symptomatic* of a tumor in the brain or of tertiary syphilis. If the patient dies in a fit, the rest of the brain presents merely the appearance of vascular congestion, met with in the case of a true epileptic. The tumor in the brain, if the cause, is not the proximate cause—this will probably always escape us.

If the convulsions occur in a child who is cutting teeth, or has worms, or in a pregnant woman who has albuminuria, or in a case of scarlatinal dropsy, or of lead poisoning, we call it eclampsia.

We give the same name to convulsions which in children frequently announce the invasion of febrile exanthemata—variola, for instance—and to those which supervene at the close of *cerebro-meningitis*, or what is termed *cerebral fever*.

If the epileptiform convulsion occurs in a man who has just been bled, or in an animal who is left to die of hæmorrhage; or again, if it occurs in that curious experiment of Brown-Sequard's, after the section of a lateral half of the spinal cord under the

influence of certain kinds of external irritation, we also call it eclampsia.

If we accept the name of eclampsia for convulsions occurring in the cerebral fever of children, why should we refuse the same name to convulsions due to chronic cerebro-meningitis, which, according to Royer-Collard, Calmeil and others, causes the general paralysis of the insane?

We give the name of symptomatic epilepsy to convulsions caused by worms, or by tubercle or cancer of the brain; why should we refuse the same name to convulsions at the onset of tubercular meningitis?

Let us be logical, therefore, and admit that all epileptiform convulsions are apparently the expression of the same proximate cause.

We cannot admit that congestion plays any part in the production of these cerebral phenomena, when we see that the severity of the fit is in no proportion to the degree of previous plethora; and epileptiform seizures after a great loss blood, are as severe as under different circumstances. During the tonic period of a convulsion the glottis is closed, and the patient makes a supreme effort, during which the vessels of the neck and face, and necessarily of the brain also, become congested; but no one can say that the profound bewilderment which succeeds an attack of epilepsy or eclampsia is the effect of this passive congestion; for the sudden coma at the beginning of a fit, and which is from the first accompanied by a deadly pallor, is the sign of such a deep modification of the function of the brain, and perhaps of its intimate structure, that the sequential stupor is in all probability a result of this modification.

Dr. Brown-Sequard has shown that at the onset of an epileptic fit the great nervous centres and the medulla oblongata of an animal under experiment, became paler instead of congested. And, of course, the same condition exists in so-called *apoplectic form cerebral congestion*, when it is a manifestation of epilepsy.

Some think it natural that cerebral congestion should produce sudden and transient apoplectic phenomena. But see what occurs in a woman during the violent efforts of labor; the face becomes blue, the lips and eyelids swell, and there is no doubt but that the sinuses of the dura mater and the whole substance of the brain

share in this congestion. But puerperal eclampsia manifests itself often before all signs of labor have shown themselves, and in most cases when uterine contractions have not even attracted the notice of the patient. True, there is albuminous urine; but what has albumen in the urine to do with convulsions, when a rational explanation is sought for? In such cases convulsions are excited by a sympathetic cause as slight as the scarcely perceived sensations which arise from the presence of worms in the intestines.

An intense degree of congestion may occur in children with whooping cough, so that there will be hamorrhage from the nose, the face will be persistently puffy, and ecchymoses will sometimes form beneath the eyelids. The brain of course participates in the congestion. But can the state of bewilderment which follows be compared to the lightning like suddenness of eclampsia, or the apoplectic phenomena which follow it?

Acrobats, walking with their heads downward, never on that account suffer from apoplectic stupor.

To cerebral congestion are referred hemicrania, and simple headache; the stupor of typhoid fever, typhus, pneumonia, the plague, variola, scarlatina; the delirium of pneumonia, of hysteria, St. Vitus dance, erysipelas, etc. Sleep itself has been ascribed to cerebral congestion; hence, whenever stupor, drowsiness, delirium or dreaming set in there was said to be congestion; but no body knows what sleep is; the resemblance between deep sleep and coma has probably led medical men to attribute to one and the same cause conditions which have but a deceptive resemblance. This view -- not based on experiments -- has influenced the idea formed of the action of poisons. Opium caused sleep by cerebral congestion. Solanaceous plants, ramunculus, colechicum, digitalis, prussic acid, etc., caused stupor by means of cerebral congestion. The same obtained with *viruses* and with animal poisons, whether wholly produced in the living organism, or introduced from without. Profound stupor was always ascribed to congestion. But there is no need to have recourse to congestion in order to explain the action of poisons. They are absorbed, and circulate in the blood and come in contact with all parts of the system, disturbing them more or less completely, independently of the liquid which acts as their vehicle; and often,

as shown by the experiments of Magendie, in an inverse ratio to the amount of blood accumulated in the brain.

Healthy blood, when not extravasated, is not so injurious to our tissues as is commonly said. Something more than mere physical congestion is needed to produce apoplectic phenomena; something different, even from that special and essentially vital molecular condition which is termed inflammation.

In a child with cerebral fever, there is stupor, but never to a great degree. But let an attack of eclampsia supervene, and in a minute he is in an apoplectic condition.

The same is true in regard to the general paralysis of the insane. With the exception of delirium and some uncertainty in his speech and gait, the patient apparently enjoys good health. But on having an epileptiform seizure, he is instantly in an apoplectic condition.

In either case, the cerebro-meningeal inflammation is but the indirect cause of the convulsive apoplectic attack — the immediate one being the minute central modification.

Hence it follows that the *apoplectic condition* so often observed in the paralysis of the insane is dependent upon *eclampsia*, just as the analogous condition which follows an *epileptic fit* is dependent on *epilepsy*.

From this discussion we deduce the following points.

The condition necessary to an attack of epilepsy or eclampsia, is a cerebro-spinal modification, unknown in its essence and in its nature, which in a second abolishes all manifestations of animal life. This cerebro-spinal modification is sufficient to produce the apoplectic stupor which follows the attack. Cerebral congestion, which in extremely rare cases may produce subcutaneous ecchymoses, cerebral capillary hæmorrhage or even meningeal hæmorrhage — which is neither sudden nor transitory — is wholly secondary.

LECTURE III.

Epilepsy.

§ 1. The phenomena of *Grand Mal*, and their imitation. — Status Epilepticus. — Predisposing and Exciting Causes.

An epileptic convulsion is only one of the forms of epilepsy; and there are many others, which, apparently dissimilar, present the greatest analogies between one another, and are the expression of the same disease. By studying the various forms of epilepsy, you will be able to recognize this disease, one of the most formidable which afflict mankind, by means of imperfectly developed, nay, apparently insignificant, symptoms.

But first, what is a true epileptic convulsion, and how shall we recognize it from feigned epilepsy?

One day Dr. Calmeil and myself were talking on this subject with Esquirol, who believed that even a person familiar with the phenomena of an epileptic fit could not perfectly imitate the disease. Suddenly Dr. Calmeil fell on the floor in violent convulsions. After examining him, Esquirol exclaimed, "Poor fellow, he is an epileptic." Dr. Calmeil then got up and asked if he still thought that epilepsy could not be feigned. Although Esquirol was mistaken then, I still believe that a fit can be imitated only imperfectly, because there are some phenomena which cannot be produced at will.

In a genuine fit, the patient, without any premonitory symptom, screams and falls, usually on his face. In a feigned attack, a man either takes good care not to fall on his face, or else keeps his hands in front of him. The true epileptic *may* fall backwards or on one flank; but it is on the prominent portions of the face that you will find either actual wounds, or scars of old ones; and cases occur where persons fall into the fire, whose *faces* are so charred as to be unrecognizable. Fractures of the skull, and of the bones of the extremities, or dislocations, may be caused by the fall.

When an epileptic falls down, he is not red, as has been wrongly stated, but deadly pale; this cannot be feigned. Convulsions then

begin immediately; they are tonic at first, and more marked on one side, sometimes limited exclusively to one half the body. One arm, for instance, is twisted on itself and drawn backwards, the hand flexed, the thumb forcibly adducted, and hidden under the flexed fingers. The foot is arched and extremely tense; the leg is forcibly extended and twisted on itself. The muscles are as hard as iron, and their rigidity cannot be overcome; although they contract convulsively with a certain degree of slowness, they are agitated by quivering of their fibrillæ, which can plainly be felt. The sterno-mastoid, in contracting, draws the head to the affected side, with the face turned to the opposite side. The tongue, swollen and purple, is thrust out of the half-opened jaws by the involuntary contraction of the genio-hyo-glossi; but it is seldom bitten until in the second stage. The rigidity of the muscles of the thorax and abdomen completely arrests respiration; and then the fibrillary quivering is no longer perceived. After a few seconds, the face begins to redden, the veins of the neck get distended, and the face turns livid, remaining so for some time. Those who feign epilepsy, generally convulse themselves on both sides; they cannot imitate the fibrillary quivering, nor the appropriate countenance.

After from ten to forty seconds, this stage of tonic convulsions is followed by the second stage, or that of clonic convulsions, which lasts from half a minute to two minutes; so that the whole duration of the attack varies from two to three minutes; it is generally less, very rarely more. The time seems much longer, unless accurately noted.

The clonic convulsions come on at first every second or oftener. The breathing becomes spasmodic from convulsions of the thoracic muscles. Those muscles are most convulsed, that were so in the tonic stage. The convulsive movements describe a gradually larger and larger circle, until the muscles are fully stretched out, and extended suddenly, when the patient draws a deep sigh, and the *epileptic fit* is over.

In the third stage, more properly the result of the fit than a part of it, the patient is in an apoplectic condition. His breathing is stertorous, and during expiration his half-opened lips give rise to frothy saliva, tinged with blood from the bitten tongue. The patient is unconscious; when he has fallen into the fire he

may be burnt, without feeling pain. The brightest light will not contract the dilated pupils. He neither hears nor smells, and strong ammonia has no effect. These points cannot be simulated. This stage lasts from a few minutes to a half hour. The patient then opens his eyes, seems confused and ashamed. If questioned, he can scarcely give his own name; perhaps gives no answer. He walks like a drunken man.

He allows himself to be led about. For a few hours or a day, and sometimes two days, he complains of headache and *failure of memory*. Sometimes he is temporarily hemiplegic.

This is the *grand mal*; known also by various synonyms.

Epileptic seizures, in the beginning, especially, may occur during the night, and not even the patient himself suspect it. But certain phenomena, and certain accidents, such as traces of contusions, enable us to recognize a past attack. Dislocations of the lower jaw and of the shoulder are on record as occurring in night attacks; they do not occur during ordinary sleep.

A few hours or a day after an epileptic fit, you will often find on the forehead, throat or chest, minute red spots like flea bites, which do not disappear on pressure; perhaps large ecchymoses, also. This fact, *modern* authors have not noticed. All doubt in any case is cleared up by the appearance of these spots; they are a sure sign of an epileptic fit. Similar lesions no doubt occur in the brain, the meninges and the spinal cord, and cause the coma, the heaviness of the head, the paralysis, more or less permanent, and the other nervous symptoms that follow a fit, such as perversions of mind and memory, and delirious attempts at suicide or murder. These cerebral and spinal ecchymoses have been actually found. A small clot, the circumference of which was beginning to *soften*, was found in the middle of the left posterior lobe of a girl aged sixteen, who had been subject to epileptic fits for three months only; the substance of the spinal cord was so softened as to flow out through an incision in the meninges.

Involuntary micturition or defecation should make a medical man suspect epilepsy. A lady who was examined as to her mental condition was a puzzle for some time. Light was at length thrown upon her case, when incontinence of urine both by day and by night was added to the known symptoms. Further ques-

tioning made it plain that the lady had frequent nocturnal fits of epilepsy and attacks of vertigo in the daytime.

You hear of attacks of grand mal that last two or three days, and terminate in death. This *status epilepticus*, as it is called, is not one attack, but a series of attacks. The epileptic has a fit, like a parturient woman seized with eclampsia. Before the stupor of one attack passes away, another attack follows; and in proportion to the recurrence of the fits, the cerebral congestion increases, the coma is prolonged for hours, very rarely more than one day, and after a time the patient does not recover his senses at all.

When, in the *status epilepticus*, transient and scarcely visible convulsions recur every two seconds for the space of from two to five hours, this is a different and special form of seizure, dependent on a peculiar irritable condition of the brain and spinal cord. Such a continuous convulsive attack occurs more often in eclampsia than in epilepsy.

Bouchet, Cazauvielh, and some others, have claimed to have always met with characteristic lesions in idiopathic epilepsy, such as induration of the white substance of the brain. But their cases do not prove their assertion, and physicians are now agreed that the most delicate autopsies give only negative results in regard to the organic condition necessary to the disease; although the phenomena of symptomatic epilepsy depend more or less directly upon such lesions as bony tumors, cancer of the brain, syphilitic or tubercular deposits, etc.

Epilepsy in women is said to set in more frequently at puberty or the menopause; this is very doubtful. Epilepsy sets in at *all ages*, but more commonly during adolescence in both sexes.

I do not deny the influence of emotions felt by a pregnant woman, upon the fetus in utero; but their agency in causing epilepsy has been extremely exaggerated.

Errors in diet, excessive drink and venery, masturbation, prolonged chastity, forced intellectual labors, violent moral emotions, etc., are put down as causes of epilepsy; it is not proven.

Leuret, in his "Researches on Epilepsy," states that 35 out of 67 cases of epilepsy observed by himself, had the first attack after a fright. I have found by no means so large a proportion. Patients frequently impute the disease to fright, but in most cases

I find that this fright was not more repeated or severe than with many who never have fits; nor does the patient usually date the fit earlier than weeks, months, or even years, after the fright. Fright is with many a pretext only, to hide the true cause—hereditary taint.

But the influence of fright cannot be denied. Five years ago a man was suddenly awaked and frightened by horrible shrieks from his wife, and a few days afterward he had his first epileptic attack. The only ailment he ever had was chronic coryza, to the sudden disappearance of which he ascribed his epilepsy. He was of robust constitution; he was never addicted to drink. His own child, then four years old, was healthy and never had convulsions. None of his relatives, direct or collateral, had ever suffered from nervous disorders.

In the beginning there was a sensation of inward cold and trembling, sometimes in the arms, the legs, the thighs; sometimes in the pit of the stomach, or other parts of the body. The sensation spread all over him, and lasted a few minutes, without loss of consciousness. The attacks recurred at irregular intervals, rarely more than five days, and were brought on by the slightest painful emotion, the least variation of temperature, a draught of cold air, or exposure to the hot sun. They generally increase in frequency and severity; within the last few months the fits have been attended with unconsciousness. One time, he put his hand to his head and felt a fresh wound, received on falling during a fit of which he had no recollection.

His fits now are generally preceded by the sensations already described. He next loses consciousness, is convulsed, and immediately becomes delirious. The attack lasts from twenty minutes to an hour. He then becomes calm again, but complains of general lassitude, and usually of headache, which he compares to the compression of a circle of iron. He is oftener seized at night than in the daytime. Of late, his memory has seemed to fail, and his mind to be confused. He has become impotent, also.

His fits never occur in the same way. One time, when he had just lain down, he suddenly got up, and throwing his arms about, began to vociferate in the most atrocious manner. He looked exactly like a delirious maniac, his face haggard and of a purple-red color. There was quivering of the legs, followed by convul-

sions. He was wildly delirious, and rushed out of bed, and had to be confined with a strait waistcoat. He was perfectly unconscious of his acts, and kept insulting his attendants. The fit lasted twenty minutes, when, with no previous indication of a change, he suddenly claimed that the fit was over, and asked to be unloosed.

Once he was seized while walking in the garden. He suddenly turned pale and haggard, while talking; his teeth chattered and his arms moved about. He was made to sit down; his face then grew red; he laid hold of his companion's coat; when asked what he meant to do, he said distinctly that his companion ought to take it off. He was so restless that he could hardly be kept on the seat. The attack lasted ten minutes; he was then bewildered and stupid. When made to go up to the ward he offered no resistance, but walked like a drunken man. On recovering himself, he remembered nothing that had occurred.

On another occasion, while sitting by his bed, he suddenly beat the ground with his feet. His face was very pale, haggard and distorted. He kept nervously looking about under the sheets, and everywhere, exclaiming, "Where is it? — my spoon." He did not answer questions, and he seemed unconscious. Yet he pushed away my hand when I touched him. He had no convulsion. The fit lasted two or three minutes and left him prostrated.

§ 2. Variety of Manifestations of Epilepsy. — *Petit Mal* or *Vertigo*. — *Aura Epileptica* ; *Partial Epilepsy*.

Epilepsy presents the greatest irregularity in its course, its progress, and the frequency of its seizures, in different individuals, and also in the same person. No case of epilepsy is more genuine than that in which the fit occurs quietly, without any extensive movements, and without much noise. Some persons are struck down suddenly, with no warning nor cry. With others, while being spoken to, the knees gradually bend, and they fall senseless, with no convulsion. These are rare cases, and are often mistaken for apoplectiform cerebral congestion.

Another form consists of mere giddiness; the attack seems not to proceed beyond the first stage, and does not pass on to convulsions; the patient is soon able to resume the conversation, as if nothing had occurred. In other cases, the first stage is absent;

the patient falls; his upper extremities, sometimes his eyes alone, are agitated; he gets up almost immediately, scarcely stupid, and but little confused. In other cases, the three stages are all present, but extremely slight and brief; the whole attack, including the stupor, occupying less than a minute.

The vertiginous form may develop into the convulsive; and sometimes the reverse obtains. Nor is it uncommon to see convulsions and vertigo develop simultaneously; or the latter appear at least in the intervals between the former, or even usher them in. However various the forms, the disease is always the same; and the transient strange phenomena of giddiness, ecstasy, or a fit of absence, are identical in their nature with the *grand mal*.

Vertigo, or *petit mal*, the most frequent form of epilepsy, is least familiar to medical practitioners, and errors of diagnosis are committed every day. Vertigo is really more characteristic of epilepsy than convulsions are. The latter, indeed, may be a symptom of other diseases. Epileptic vertigo, on the contrary, as well as the vertigo of eclampsia, has a special physiognomy which cannot be mistaken for anything else. Some persons have but very few attacks, occurring at variable intervals; or there may be one attack only; or a patient may have as many as fifty or one hundred attacks in twenty-four hours, which is never the case with the convulsive form. The attacks may be so frequent as to run into one another, (*status epilepticus*), and simulate a continued attack which lasts two or three days. They may follow one another in rapid succession as in a series, and then cease for a pretty long time. Sometimes they come on periodically at nearly equal intervals of from two months to one day. In the majority of instances, a person taken with epileptic vertigo is suddenly in a kind of ecstasy, and yet does not fall down. If he has an object in hand he drops it, or convulsively throws it away. The whole lasts from two to four seconds, and sometimes more; the attack is then over, the patient recovers completely, and resumes his occupation or conversation with no suspicion of what has occurred. The attack may last a longer time, however, and may consist of, or be attended by, delirium.

I saw a little girl six years old, five weeks after the first attack. Whilst at play or dinner, she would stop suddenly, turn her head slowly to the right, with the eyes open and fixed. There were

no appreciable convulsions, and no distortion of the face. The skin could be pricked with a needle without her seeming to feel pain. After four or five seconds she would recover herself, and look bewildered and cross. She would generally express a wish to move about, and ask to be taken into the next room. In a few seconds more, after a deep sigh, she would return to her play or her dinner.

A man subject to epileptic vertigo, while playing at cards and holding in his hand a card which he is going to throw down, may suddenly become motionless, shut his eyes, or stare before him, and then, after a deep sigh, continue to play.

A girl aged four, had every other day a general shock, and was then unconscious; her face had a vivacious appearance in somecases, and other times a stupid look. In about a minute, she would exclaim that she was frightened, would act strangely and talk incoherently; these hallucinations would last several hours. Otherwise, her health was good; her intellect was precocious. After two weeks, the attacks recurred twice a day, and her mother thought her mind was failing.

In these cases, the patient is isolated from the external world; he sees, hears and feels nothing, and remains motionless in a kind of ecstasy. There are cases in which the epileptic may complete the movements he has begun, and even perform new ones, with a certain degree of regularity.

A great musical amateur has often been seized with vertigo while playing a piece; but during the attack—which does not last more than ten or fifteen seconds—he continues to play in perfect time; he then comes round, knows full well that he has had a fit of absence, and continues to play without difficulty.

I know an architect who has epilepsy. When in a fit, he runs rapidly over narrow scaffoldings, without a mis-step, shrieking his own name in a loud, abrupt voice. A quarter of a minute afterwards he resumes his occupation, with no knowledge of the fit.

You will not only meet with persons who perform certain acts during a fit of epileptic vertigo, but also with some who can answer when spoken to, but are unconscious of their answers. They may be compared to somnambulists, or better still to those persons who answer questions during sleep, but when they wake up are unconscious of it.

I knew a child who used to exclaim, "Go away, go away," whenever he was made to smell ether or ammonia, during a fit.

A young lady patient would make no answer when spoken to quietly in a fit, but if addressed in a commanding tone, she answered curtly, and in a loud voice.

Epileptic seizures, *grand mal* oftener than *petit mal*, are some times ushered in by disturbances of the nervous system. A peculiar sensation, like wind, or vapor, or tingling, starts from some portion of the body, spreads upward, and on reaching the head, is followed by the fit. It may last a second, or sometimes a minute. It is termed *aura epileptica*. In some cases it is acute pain, beginning in the hand or foot, running along the length of the limb, which is sometimes barely agitated.

The *aura*, again, may be characterized by sudden convulsions, as in the case of a little boy who had convulsions, caused, as I found at the autopsy, by tubercles in the brain. He would call out, "I am taken with it;" his hands were first moved involuntarily, his face was next convulsed, and the epileptiform fit followed.

In other cases, the part from which the *aura* starts, may swell; rings previously easy, suddenly become too tight for the fingers; the skin is red, and, in a short time, of a more or less deep violet color; or again, the skin may become excessively pale, after having been injected for some time.

The *aura* may be *visceral*, and escape the observation of the physician from its simulating other affections. In some cases, the *aura* begins in the head, with giddiness or pain, and descends with rapidity to the limbs. In rare instances it may be both ascending and descending at the same time.

Sometimes the *aura* does not spread to the brain, and is the only manifestation of epilepsy. These cases are termed *partial epilepsy*.

A woman had from four to seven of these attacks in an hour. The *aura* began in the leg, and affected the trunk, arm, and face of one side. While the convulsions lasted, she cried out with the awful pain she felt. Her mind was clear, but her speech was embarrassed. Not a trace of the fit would remain after about a minute and a half. She was rapidly cured by belladonna.

Angina pectoris, in many cases is but a form of partial epilepsy.

The connections between *epileptiform neuralgia*, and the different forms of *aura*, and consequently of epilepsy, will be considered at another time.

§ 3. Epileptic Insanity.

"Epileptics," says Esquirol, "seldom live to an advanced age." They are dyspeptic, and "become either obese or emaciated." There is "a tendency to venery," which "perhaps is the cause" of the disorders which arise when epilepsy has lasted a long time. "The *cerebral functions* become more and more degraded."

According to Jules Falret, there are three forms of intellectual disorders observed in epileptics.

1. That form occurring in the intervals between the fits, constituting the habitual mental state.

2. The temporary epiphenomena, occurring before, during, or after, a fit.

3. Paroxysms of total insanity, either directly connected with the convulsive or vertiginous phenomena, or independent of them.

Mental disturbance is not always connected with the so-called physical symptoms—convulsions and vertigo, but is in some patients the only manifestation of epilepsy.

First. The vast majority of epileptics, especially those suffering from frequent attacks, present in the *intervals between the seizures*, peculiar mental phenomena, which yet cannot be termed *insanity*. They are sad or happy, violent or benevolent, dull or brilliant, to an extreme and preternatural degree. Nothing is more mobile than their disposition; for a certain period in their lives, they are diligent in their profession, and agreeable to their friends; but at other times they are indolent and forgetful; they waste their time, and wander about with no object in view, and are themselves conscious of the obtuseness of their intellect; the worst propensities develop; they become liars and thieves; they are irritated, and pick quarrels, and commit sudden acts of violence without provocation. There is a true intermittence of the psychological phenomena referable to the affections and temper, or belonging to the intellectual faculties.

Second. *During their seizures*, epileptics are, as a rule, completely unconscious. We have seen that in some instances, they will speak and perform certain actions, like somnambulists; I will

add that some remember, more or less vaguely, the ideas that occupied their mind, and have a sense of some painful condition, or unavoidable misfortune; this occurs principally in those attacks which are incomplete also with respect to the disorders of movement, as well as the loss of consciousness; they occupy, according to Falret, a medium place between vertigo and convulsions.

Before the fit, in some individuals, there are changes of temper — like clouds before a storm. With others, there is a sort of *intellectual aura*, which precedes the convulsions by a few minutes only, and constitutes, in a certain measure, its first symptom; this consists of hallucinations, such as sounds of bells or voices; an odor; the sight of colors or of a ghost; or an unusual brilliancy of real objects; these sensations are like those of persons under the influence of hashish. The moral emotions or intense terror which have in some cases caused the disease, may be renewed at each attack.

After the attacks, epileptics usually remain in a state of semi-hebetude for a few minutes, or perhaps several hours. A furious delirium not unfrequently succeeds this state, and may last a few hours only, or persist two weeks — usually two or three days; this usually takes the form of instinctive blind violence; but with some, we can only say that there is great disorder of actions, and incessant and incoherent talking. The nature of this delirium has been considered in the Lecture on Cerebral Congestion.

Third. True epileptic insanity occurs in two forms, which we call *petit mal* and *grand mal*, to indicate the relationship between the physical and mental manifestations of epilepsy.

Petit mal. The epileptic first becomes despondent without cause; he is then somewhat giddy; he is partly conscious of the difficulty of collecting his thoughts, and of fixing his attention, and of sudden instinctive impulses. There is a deep feeling of inability to resist a superior force which holds the will in subjection; the patients say they are no longer themselves; they are victims of an instinctive and groundless terror, and *wander about* with no object in view. All the painful thoughts which they have had at various periods of their lives, spontaneously recur to them unchanged, whenever they are attacked. In this state of extreme mental disturbance, they are apt to commit all kinds of

violence, suicide, theft, arson, homicide. Some knock their heads against walls, or exhaust their rage on inanimate objects. Others strike repeatedly the first person they meet, and whoever comes to help; repeated blows, or the injuring of several persons, seems to characterize the *furor epilepticus*.

When the patients recover themselves — which is sometimes immediately after an act of violence which forms, as it were, the crisis of their attack — they are in a state comparable to that which succeeds a painful dream; they begin by denying their acts, which by degrees they partially recollect; there is *almost complete forgetfulness*.

Grand mal, or *furious mania*, is sometimes preceded by *no premonitory symptoms*; in other cases, there may be cephalalgia, vomiting, injection or brilliancy of the eyes, alteration of the voice, slight convulsive movements of the face or limbs; or mental symptoms — sadness, irritability, or slight excitement; but these prodromata precede the explosion of epileptic mania by a few hours only, at most. The suddenness of the attack distinguishes this from other forms of mania.

In their state of agitation, the patients bite, and tear, and cry, and talk incessantly. They are the most dangerous class of madmen, and are universally dreaded in the asylums; they can be restrained and protected only by the most coercive measures, such as the straight waistcoat, or lengthened confinement in a cell.

Another fact, distinguishing epileptic from other mania, is the *terrifying nature* of the predominating ideas, and the *frequency of hallucinations* of hearing, of smell, and particularly of sight; ghosts and assassins, luminous objects, fiery circles, blood and red colors are seen.

The patients answer questions, and notice what is occurring more frequently than most insane persons, suffering from general delirium with excitement; the fact that the delirium is somewhat connected and comprehensible, contrasts strongly with the nearly total obliteration of all recollection of the fit after it is over.

An attack generally lasts a few days only — less than in other forms of mania. Its termination is in general as sudden as its invasion. In some cases, the patients remain for a short time

in a state of slight stupor, or of physical and moral torpor, before they regain their reason completely.

The *intellectual petit mal* and *grand mal* differ from each other as much as partial differs from general delirium, in cases of insanity; but they have resemblances also, which denote their common origin. In both, the delirium comes on in paroxysms of relatively short duration, when compared with those which characterize other mental diseases; its explosion is sudden, its disappearance no less so; and after it has passed off, the patient has totally or almost totally forgotten his painful thoughts, his frightful hallucinations, and his violent acts. The identical nature of these two varieties of epileptic insanity is proven, first, by their frequently occurring alternately in the same individual; secondly, by the existence in the same individual, or in different individuals, of many intermediate states, from transient mental cloudiness to furious maniacal excitement; and thirdly, by the more or less direct connection in the case of the *intellectual petit mal*, with vertigo, and in that of the *intellectual grand mal*, with the convulsive form of epilepsy.

In very rare cases, convulsive or vertiginous attacks are invariably attended with delirium; generally, convulsions or vertigo are alone present; with some patients, paroxysms of mania alone are noticed. Intellectual impairment seldom occurs, until there have been manifestations of epilepsy for some years. When the attacks have recurred frequently, and for some time, the patients fall by degrees into a continuous condition of dementia and idiocy, only interrupted from time to time by phases of agitation of short duration. There are epileptics, however, who have sound minds in spite of frequent and intense attacks. Cæsar, Mahomet and Napoleon are said to have had epilepsy.

Insanity may occur at any age. A child eighteen months old, had an attack of vertigo, which lasted a few seconds, and which was his first epileptic symptom; the next two months, he had five or six attacks; and after a year without any, he became subject, when three years old, to attacks of vertigo, and of convulsions. Now, at the age of four and a half years, he has had frequent convulsions, and almost constant vertigo for three weeks. In the intervals between the fits, his reason is impaired, he utters savage cries, and often bites those who are with him.

When epilepsy first occurs late in life, insanity will probably not follow it; although Calmeil has recorded the case of a woman aged 73, who became insane after a first attack of epilepsy.

Delirium chiefly occurs when the fits recur at short intervals, as in a series, especially when they are imperfect, and the "*disease does not find a vent*;" and when the disease bursts out anew, after a prolonged suspension. This proposition seems to include the apparently contradictory views of different authors.

§ 4. Hereditary transmission of Epilepsy. — The Influence of Consanguineous Marriage.

I hardly understand why trustworthy authors have doubted the influence of *hereditary taint* on the production of epilepsy. They may have been misled by the fact that epilepsy, when transmitted, may be transformed into other nervous disorders, and *vice versa*. Hereditary transmission may also spare a generation, or affect it at a late period, after the next generation is attacked.

Epilepsy may be traced to such cerebral diseases as softening, hemorrhage, etc., or merely to strange nervous phenomena, perfectly different from epilepsy itself, as, for instance, Daltonism.

A gentleman now 88 years old, was afflicted with melancholia at the age of 64, of which he is at present perfectly cured. He had two sons and a daughter. The eldest son is melancholic, but of sound mind; the second had locomotor ataxy, and died mad. A son of the latter, now 30 years old, is as yet of sound mind, but has an idiotic child. The daughter, who is without intelligence, had two sons; the eldest of whom died insane and paralysed; and the other is almost idiotic. This gentleman had also a sister who became mad at the age of 30; she had a son and a daughter; the son from infancy had night blindness, and now has epilepsy; the daughter was amaretic and died insane, leaving a son with impaired intellect.

Marriages of consanguinity play some part in the history of epilepsy. Of all the fatal consequences of intermarriage, the most frequent is deaf-mutism. According to the researches of Dr. Boudin, hereditary predisposition has a very small share in the production of deaf-mutism; if 1 represents the risk of giving birth to a deaf and dumb child in an ordinary union, that risk is equal to 18 in marriages between cousins-germans, to 37 in mar-

riages between uncles and nieces, and to 70 in marriages between nephews and aunts. Deaf-mutism sometimes occurs *indirectly* from intermarriage — as in the offspring of healthy parents, one of whom was the issue of an intermarriage. Now might not the fact that deaf-mutism is produced even indirectly, be applied also to all the fatal consequences of intermarriage — among which I enumerate sterility, idiocy and epilepsy?

[The author's view on the question of consanguineous marriages, is not universally accepted. The following extract is from a memoir, read at the Academy of Sciences of Paris, by Dr. Auguste Voisin: "There are at present in the commune of Batz, near Croisic, 46 instances of marriages contracted by individuals, already near relatives; 5 by cousin-germans; 31 by the issue of cousin-germans, and 10 by cousins of the 4th degree. From the 5 marriages between the cousin-germans, 23 children were born, none of whom presented a congenital deformity; 2 of them died from accidental diseases. 31 marriages between cousins, the issue of first cousins, produced 120 children, none of whom is affected with congenital disease or deformity; 24 have died of acute disease. 10 marriages between cousins of the 4th degree, gave birth to 29 children, all in good health except 3, who died of acute diseases." Note by Bazire.]

§ 5. Diagnosis of Epilepsy from Eclampsia — from Hysteria — from Symptomatic Epilepsy. — Prognosis. — Treatment.

Of all convulsive disorders, *Eclampsia* is the most difficult to diagnose from Epilepsy.

A pregnant woman utters a loud cry and is suddenly seized with convulsions; her limbs are distorted on one side chiefly, her head inclines to one shoulder, and the face is turned to the opposite side; her tongue is thrust out of her mouth, and may be wounded by the teeth; froth tinged with blood soils her lips and cheeks — exactly as in epilepsy. The convulsions last from one to two minutes, and are succeeded by apoplecticiform stupor, as in epilepsy again. Eclampsia, whether puerperal, or infantile, or saturnine, or depending on albuminuria, is distinguished from epilepsy,

First, by the recurrence of the attacks; in epilepsy, except in the *status epilepticus*, the convulsions are separated by long inter-

vals—years, months, or days; eclampsia is more continuous, and may recur even before the stupor of the preceding attack has passed off, and is always imminent while the cause upon which it depends is in full force; but when this cause is once removed, the recurrence of the fits is improbable—while a first attack of epilepsy almost fatally mortgages the future. Because of the continuous convulsions, death is more frequently an immediate consequence of eclampsia, than of an epileptic fit; and is due to a commotion of the nervous centres caused by the convulsions, or to asphyxia, from the persistence of tonic convulsions in the respiratory muscles.

Secondly, and chiefly, eclampsia is diagnosed from epilepsy by the circumstances attending the attack. In epilepsy, nothing announces the attack; a minute before it occurs, whether preceded by an aura or not, the patient is as well as a week before;—except in symptomatic epilepsy, which, strictly speaking, should not be separated from eclampsia. Eclampsia, on the contrary, is dependent on a pathological condition characterized by other symptoms, and occurs in connection with some acute or chronic disease; it is often possible to foresee it. When epileptics are seized with eclampsia, a diagnosis cannot be made.

In a case of infantile convulsions, epilepsy will not at first be thought of; yet, in children, especially when over five years old, epilepsy may be dreaded for the future, when the attacks of eclampsia occur frequently and for the least thing. I have also seen epilepsy follow a more or less distant attack of puerperal eclampsia. A connection between eclampsia and epilepsy is particularly probable in that form of partial convulsion which effects the muscles of the larynx in infants, and has been improperly called *thymic asthma*. An infant, eight months old, subject to these attacks, healthy in other respects, would often suddenly utter a loud and angry cry, as if in acute pain; then followed a noisy hissing inspiration like that of whooping cough; the face was red and the veins of the neck were swollen. In a few seconds the child recovered his normal condition; he had suffered also from convulsive attacks; in such cases, asphyxia is produced if the laryngeal spasm lasts two minutes. These partial convulsions may be a manifestation of epilepsy, which may in time present more characteristic phenomena.

The differential diagnosis between Hysteria and Epilepsy is in some cases attended with great difficulty. In exceptional cases, a convulsive attack of hysteria will set in suddenly, or the patient may have a spasmodic sensation starting from some point of the body and becoming general, somewhat like the *aura epileptica*; but as a rule, the *aura hysterica* persists much longer than the lightning-like flash of the *aura epileptica*; and it starts almost constantly from the same point; it is like the pressure of a ball upon the umbilical and epigastric region, which, extending to the œsophagus, produces, on reaching the throat, a feeling of choking. Hysteria affects the female sex almost exclusively. An attack of hysteria is more tumultuous — of epilepsy, more silent. An epileptic fit rarely lasts three minutes; hysterical convulsions persist much longer. There are cases, however, that appear to be on the confines between the two diseases. And some women are at the same time hysterical and epileptic; there is no reason why either disease should protect against the other.

In Symptomatic Epilepsy, a patient will sometimes, previous to the epileptiform convulsions, have more or less violent headache, definitely localized; there is sometimes, also, more or less complete paralysis of motion, limited to one side of the trunk, the muscles of the face, the eyes, the soft palate; there is sometimes paralysis of sensation; there may be also impairment of the intellect; these symptoms indicate a more or less profound organic lesion of the brain, such as tubercular, syphilitic or cancerous tumor. A patient who had been treated for epilepsy for sometime by Dupuytren, finally placed himself under the care of Dr. Lebreton, whom I was asked to meet in consultation. We made out that the patient had violent and chiefly nocturnal headache, almost exclusively on one side of the head. The symptoms indicated syphilis, and on inquiry, we found that the patient had a venereal affection some years before, to which he had never paid attention. Hydrarg. Bi Chlor., 1 part to 1,000 of water, dose, a drachm, effected a radical cure.

The resemblance to idiopathic epilepsy, is often much closer than in this patient, and the lesion is often so trifling that it is not suspected; the removal of a carious tooth or of a tape worm has cured what appeared like idiopathic epilepsy.

Epilepsy has been generally considered incurable; but there is no medical man of large experience who has not seen some epileptics get well. A long truce, however, is not a cure. *Petit mal* is considerably more intractable than *grand mal*.

Long ago, according to Murray, Greding had several times administered belladonna, and the patients improved remarkably. Leuret and Ricard confirmed these observations; but Bretonneau has handled this remedy with the greatest success.

Belladonna may be prescribed as follows: Ext. Belladonnæ, Pulv. Fol. Belladonnæ, aa gr. $\frac{1}{4}$, for one pill. During the first month the patient takes one pill every day, in the morning, if his attacks occur in the daytime; or in the evening, if they are chiefly nocturnal. One pill is added to the dose every month; and whatever be the dose, it is always taken at the *same time of day*. It is impossible to say beforehand whether five pills, twenty, or more, should be the maximum dose; excessive dilatation of the pupils, and very uncomfortable dryness of the throat, indicate toxic effects beyond which the dose should not be pushed. If the belladonna is borne with great difficulty, the dose should be increased only every two, three or four months.

When an improvement seems to show itself, the last dose given is continued for sometime, and then gradually diminished. Lastly, all treatment is suspended for a time, and is resumed again, after an interval proportionate to the degree of improvement. Patience, both in physician and patient, is the principal condition of success. A year sometimes is scarcely sufficient for discovering the influence of belladonna, and if in the succeeding year some improvement follows, the treatment is to be persisted in for two, three, or four years.

I have lately preferred this solution: Atropiæ Sulph. 1 grain, Spts. Vini Gallici, 100 minims; one drop instead of one pill.

Although this treatment has appeared to me the least inefficient, yet I have seen it fail completely. When it is ineffectual, I sometimes use with benefit the preparations of silver, of copper, and of zinc. In most cases, I combine these various remedies. I give belladonna in the morning, and in the evening nitrate of silver gr. $\frac{1}{3}$, or more, ten days running every month.

For the next ten days I replace the nitrate of silver by the sulphate of copper, in doses of two grains, increasing gradually

to six, always taking care that the stomach tolerates the drug. For a child, the first dose should not exceed half a grain.

For the last ten days of the month, I replace the copper with zinc. I use the *lactate of zinc*. The dose is from two to eight grains.

Quite recently, my excellent friend Dr. Henry Gueneau de Mussy has stated to me that he had been remarkably successful in the treatment of epilepsy by *bromide of potassium*.

On the ground that modifications of the circulation often produce corresponding modifications of innervation, Dr. Duclos (de Tours) thought of treating epilepsy by *digitalis*. In a certain number of cases he has seen weekly or monthly attacks diminish in intensity, and delayed as long as 27 months. He has known epileptics thus treated to be attacked again only five or seven years after they had ceased the treatment. He gives pills containing each one grain of the hydro-alcoholic extract of digitalis. The first day he gives one pill only; the second, one pill morning and evening; the third, one in the morning and two at night; the fourth, two in the morning and two at night; and on the fifth day, two in the morning and three at night. He continues in this way for about twelve days, until a sensible effect is produced on the circulation. After a rest of ten days, the treatment is begun again. The treatment should last ten months, during which time the intervals of rest should be increased gradually from ten to thirty or forty days.

Cases have been reported by trustworthy authors, in which the fit was prevented by firm compression between the starting point of the aura, and the nervous centres. Ingenious contrivances have been invented for this purpose.

The *actual cautery* with the red hot iron has been proposed, along the course of the nerves which the aura was supposed to follow. *Castration* has been suggested when the aura seemed to start from the testicles.

According to the *theory of laryngismus*, epilepsy is said to be caused by occlusion of the glottis, owing to spasm of the laryngeal muscles; hence, the "*very simple remedy*," "*tracheotomy*," is recommended.

These surgical means appear to be useless.

